

Middle Class Economics: Building a Clean Energy Economy, Improving Energy Security, and Taking Action on Climate Change

The President's 2016 Budget is designed to bring middle class economics into the 21st Century. This Budget shows what we can do if we invest in America's future and commit to an economy that rewards hard work, generates rising incomes, and allows everyone to share in the prosperity of a growing America. It lays out a strategy to strengthen our middle class and help America's hard-working families get ahead in a time of relentless economic and technological change. And it makes the critical investments needed to accelerate and sustain economic growth in the long run, including in research, education, training, and infrastructure.

These proposals will help working families feel more secure with paychecks that go further, help American workers upgrade their skills so they can compete for higher-paying jobs, and help create the conditions for our businesses to keep generating good new jobs for our workers to fill, while also fulfilling our most basic responsibility to keep Americans safe. We will make these investments, and end the harmful spending cuts known as sequestration, by cutting inefficient spending and reforming our broken tax code to make sure everyone pays their fair share. We can do all this while also putting our Nation on a more sustainable fiscal path. The Budget achieves about \$1.8 trillion in deficit reduction, primarily from reforms to health programs, our tax code, and immigration.

In order to secure America's energy future, cut carbon pollution, and prepare the Nation for the unavoidable impacts of climate change we are already beginning to experience, the Budget supports a wide array of programs that promote advances in clean energy, improve energy security, and enhance preparedness and resilience to climate change. The Budget continues the significant progress already made toward achieving the President's commitment to cut carbon pollution in the U.S. in the range of 17 percent below 2005 levels by 2020, and it sets us on a path to meet the President's new target to cut net greenhouse gas emission 26-28 percent below 2005 levels by 2025. As critical components of the President's Climate Action Plan, these programs are fundamental to bringing about a clean energy economy with new businesses, jobs, and opportunities for American workers.

INVESTING IN HOMEGROWN CLEAN ENERGY

Cutting Carbon Pollution by Investing in Clean Energy Technologies. The Budget provides approximately \$7.4 billion for clean energy technology programs across the Federal government. These programs conduct research, development, and deployment efforts that stimulate the evolution and use of clean energy sources such as solar, wind, and low-carbon fossil fuels, as well as energy-efficient technologies, products, and process improvements. These technologies are critical to cutting carbon pollution, enhancing environmental stewardship, increasing U.S. energy independence, and advancing American leadership in clean energy.

The Departments of Energy (DOE), Defense (DOD), and Agriculture (USDA) and the National Science Foundation (NSF) are the largest funders of clean energy technology programs, with DOE providing about 75 percent of the total government-wide funding. DOE's clean energy technology investments include:

- Over \$900 million in basic clean energy research in the Office of Science;
- Over \$900 million for programs and infrastructure that support the advancement of nuclear energy technologies, including R&D in advanced nuclear reactor technologies, life extension for existing power plants, and innovative fuel-cycle concepts;
- Over \$870 million in cutting-edge sustainable transportation technologies to increase the affordability and convenience of advanced vehicles and domestic renewable fuels;
- Over \$710 million to increase the use and reduce the costs of clean renewable power from solar, wind, water, and geothermal energy;
- About \$1 billion for the development and use of more energy efficient products and processes in buildings and industry, improved clean energy technology manufacturing, weatherizing the homes of low-income families, and support for energy planning and policy development at the State and local level to encourage greater deployment of clean energy;
- Over \$193 million to support grid modernization, resiliency and, integration of clean energy into the grid;
- Nearly \$500 million in cleaner energy from fossil fuels, focused predominantly on development and deployment of carbon capture and storage technologies; and
- \$325 million for DOE's Advanced Research Projects Agency– Energy (ARPA-E) to support potentially transformative applied energy research.

DOD's 2016 investment in clean energy technology programs is \$521 million, which supports the development of more fuel efficient jet turbine engines, including competitive prototyping, the development of technologies for more efficient facilities and ground vehicles, and the demonstration of innovative environmental technologies on DOD sites, including technical assistance to help transition them to the commercial marketplace. NSF's investment is \$377 million, which supports competitive grants for fundamental research to enable future clean energy and energy efficient technologies research. Specific activities include research related to sustainability science and engineering, such as the conversion, storage, and distribution of diverse power sources, and the science and engineering of energy materials, energy use, and energy efficiency.

Promoting Clean Energy in Rural America. The Budget provides \$355 million for the Department of Agriculture (USDA) for a range of clean energy technology programs including research related to biomass feedstock, biofuels and biobased product development, as well as demonstration and deployment of renewable energy systems, biomass feedstock production, and energy efficiency improvements.

To cut carbon pollution and promote renewable and clean energy as well as energy efficiency improvements in electric generation, transmission, and distribution sites in rural communities, the Budget also supports \$6 billion in USDA lending to rural electric cooperatives and utilities to support the transition to clean-energy and increased energy efficiency.

In addition, to support the President's Blueprint for a Secure Energy Future and the President's Climate Action Plan, the Budget includes \$50 million in loan guarantees to improve the retail infrastructure to deliver higher-blend biofuels.

Making Public Lands Available for Clean Energy Infrastructure Projects. To enhance energy security and create jobs in new industries, the Budget invests in core Department of the Interior (DOI) renewable energy development programs, providing roughly \$100 million to review and permit renewable energy projects on Federal lands and waters. These funds will allow DOI to continue

progress toward its goal of permitting 20 gigawatts of renewable energy capacity and related transmission infrastructure by 2020 as part of the President's Climate Action Plan.

Making Permanent and Expanding the Renewable Energy Production Tax Credit. In order to provide a strong, consistent incentive to encourage investments in renewable energy like wind and solar, create American jobs, and support American companies and manufacturers, the Budget would make permanent and refundable the tax credit for the production of renewable electricity. The Budget would permanently extend the investment tax credit for solar, fuel cell, and small wind property and the 10-percent credit for geothermal, microturbine, and combined heat and power. In addition, the Budget allows the election to claim the investment tax credit in lieu of the renewable electricity production tax credit for qualified facilities eligible for the production tax credit. These credits will further the Administration's policy to support a clean energy economy and to reduce greenhouse gas pollution.

Creating a Carbon Dioxide Investment and Sequestration Tax Credit. In order to accelerate commercial deployment of Carbon Capture, Utilization, and Storage (CCUS), as well as to catalyze development of new CCUS technologies, the Budget introduces two new complementary tax credits for carbon capture and sequestration. The proposal, part of the President's POWER+ Plan to invest in coal communities, would authorize \$2 billion in refundable investment tax credits for carbon capture technology installed at a new or retrofitted electric generating unit that captures and permanently "sequesters" carbon dioxide. A minimum of 70 percent of the credits must flow to projects fueled by greater than 75 percent coal. The proposal would also provide a 20-year, refundable sequestration tax credit for facilities qualifying for the investment credit that would provide \$10 per metric ton or \$50 per metric ton of carbon dioxide permanently sequestered and either beneficially reused or not beneficially reused, respectively.

Challenging the Federal Government to Lead by Example. To challenge Federal agencies to continue to lead by example, the President more than doubled their renewable energy use goals to 20% by 2020. The President's energy savings Performance Contracting Challenge was expanded and extended to deploy \$4 billion in energy-saving and renewable energy projects at government facilities through 2016 and the Administration is also committed to increasing the Federal Government's goal for reducing its greenhouse gas emissions and will ask agencies to establish a new more aggressive targets for 2025.

Promoting Ethanol Infrastructure. To support the President's Blueprint for a Secure Energy Future and the President's Climate Action Plan, the Budget includes \$50 million in loan guarantees to improve the retail infrastructure to deliver higher-blend biofuels.

Eliminating Inefficient Fossil Fuel Subsidies. The Budget proposes to eliminate inefficient fossil fuel subsidies that impede investment in clean energy sources and undermine efforts to address the threat of climate change. In total, the Budget would repeal over \$4 billion per year in tax subsidies to oil, gas, and other fossil fuel producers and separately, expand the Oil Spill Liability Trust Fund tax to apply to oil sands crude.

ENSURING AMERICA'S ENERGY SECURITY

Making Energy Go Further for the Economy and Consumers. Cutting the amount of energy we waste in our cars and trucks, in our homes and buildings, and in our factories, will make a stronger,

more resilient, and more competitive economy. That is why the President set a goal of cutting in half the energy wasted by America's homes and businesses with action aimed at doubling the economic output per unit of energy consumed in the United States by 2030, relative to 2010 levels. The Budget takes a number of steps to help reach this goal, including: supporting the accelerated development of efficiency standards for appliances and buildings; increased investment in advanced manufacturing for clean energy technology and energy-intensive processes; expanding the Better Buildings Challenge to encourage greater energy efficiency in industrial and commercial buildings and data centers; improving energy efficiency in Federal buildings; improving access to energy data for all consumers including Federal facilities through the "Green Button" initiative, under which utilities establish a standardized system allowing electricity customers to securely download their energy usage information; and supporting and encouraging the adoption of State and local policies to cut energy waste.

Investing in Energy Security. Over the President's first term, the United States cut oil imports by more than 3.6 million barrels per day, more than under any other President. The Budget proposes an extension of tax credits to support cellulosic biofuels and new tax incentives for medium- and heavy-duty trucks that run on alternative fuels like natural gas and for the fuel infrastructure needed to deploy them. The Budget also supports continued investment in advanced vehicles, including the Department of Energy's EV Everywhere initiative to make electric-power vehicles as convenient and affordable as cars powered by gasoline.

Supporting Responsible Development of the Nation's Oil and Gas Resources. The Budget continues to support the President's "all of the above" strategy for developing domestic energy resources and reducing our reliance on oil imports. This includes \$171 million and \$205 million, respectively, to fund the Department of the Interior's (DOI) Bureau of Ocean Energy Management and the Bureau of Safety and Environmental Enforcement, which share responsibility for overseeing development of oil and gas resources on the Outer Continental Shelf (OCS). The current OCS five-year leasing program will make more than 75 percent of estimated undiscovered technically recoverable oil and gas resources on the OCS available for development. Funding supports continued reforms to strengthen oversight of industry operations following the 2010 Deepwater Horizon oil spill, with an additional emphasis on ensuring the safe and responsible development of Arctic OCS resources.

The Budget also provides support for onshore energy permitting and oversight on Federal lands, with a 20 percent increase in discretionary and fee-based funding for the oil and gas program of DOI's Bureau of Land Management (BLM), relative to the 2015 enacted level. Combined with an extended and reformed permitting pilot office authority and ongoing administrative efforts, these resources will facilitate improved responsiveness to permit requests while strengthening oversight and enforcement of industry operations. BLM's costs would be partially offset through new inspection fees totaling \$48 million in 2016, requiring the onshore industry to bear a greater share of the cost of managing the program from which it benefits, just as the offshore industry currently does.

Promoting Safe and Responsible Production and Use of Natural Gas and Cleaner Energy from Fossil Fuels. Our domestic natural gas resources are reducing energy costs across the economy from manufacturers investing in new facilities to lower heating costs for families throughout the country. The Budget supports implementation of BLM's forthcoming regulations on hydraulic fracturing on public lands. The Budget also invests in research to ensure safe and responsible natural gas production. Specifically, it includes \$47 million to support an interagency R&D initiative aimed at understanding

and minimizing potential environmental, health, and safety impacts of unconventional gas resource development and production through hydraulic fracturing. This research is being coordinated between the Department of Energy (DOE), DOI's U.S. Geological Survey, and the Environmental Protection Agency (EPA) and will focus on timely, policy-relevant science to ensure prudent development while protecting human health and the environment. The Budget also invests in innovative approaches to cleaner burning fossil fuel technologies, including advanced high-efficiency combustion engines and combined heat and power, as well as carbon capture and storage technologies from both natural gas and coal. Additionally, in FY 2016, the Budget supports new R&D at DOE focused on mitigating and more accurately quantifying fugitive methane emissions from natural gas infrastructure.

REDUCING CARBON POLLUTION AND PREPARING FOR THE IMPACTS OF CLIMATE CHANGE

Promoting Voluntary and State Action to Cut Carbon Pollution. The Budget provides \$239 million to support efforts at the Environmental Protection Agency (EPA) to cut carbon pollution through commonsense standards, guidelines, and voluntary programs. A centerpiece of this work is the Clean Power Plan, a flexible approach that builds on the actions States, cities, and businesses across the country are already taking to address the risks of climate change by reducing carbon pollution from existing power plants. The Budget includes \$25 million in grants to help states develop their Clean Power Plan strategies. The Budget also includes an incentive fund for states choosing to go beyond the Clean Power Plan, which will be finalized this summer. The Clean Power State Incentive Fund will provide \$4 billion to support states exceeding the minimum requirements established in the Clean Power Plan for timing of state plans and the pace and extent of carbon pollution reductions from the power sector. This funding will enable states to invest in a range of activities that complement and advance the Clean Power Plan, including efforts to address disproportionate impacts from environmental pollution in low income communities and support for businesses to expand efforts in energy efficiency, renewable energy, and combined heat and power through, for example, grants and investments in much-needed infrastructure.

Ensuring Resilience to the Effects of Climate Change. The Nation is already experiencing the effects of climate change, and there is more to come. The Budget strengthens America's preparedness for and resilience to the effects of climate change by including base funding for investments to identify and analyze critical infrastructure vulnerabilities, as well as funds for grants to support research and State and local level resilience planning. These investments include:

- *Flood Resilience.* The Budget includes \$400 million for National Flood Insurance Program (NFIP) Risk Mapping efforts, an increase of \$184 million over current funding levels. This increase will further support efforts to help communities and businesses understand what areas pose flood risks and how to better prepare for those risks. The Budget also proposes \$175 million for National Flood Insurance Program mitigation grants, which lower the risk of flood damage to policy holders' properties. The Budget also includes robust investments that will supplement ongoing work across the Department of Agriculture in science and tool development and projects to improve ecosystem and community resilience. Specifically, the Budget includes \$200 million for USDA to emphasize watershed-scale planning and land treatment efforts and aid communities in planning and implementing mitigation and adaptation projects for extreme weather events, including mitigating the risks associated with coastal flooding.

- *Coastal Resilience.* The Budget includes funding for two new coastal resilience programs—one at the NOAA and one at DOI—that will help reduce the risks that a changing climate poses to coastal ecosystems and communities. Funding at NOAA will help coastal regions plan for and implement activities related to extreme weather, changing ocean conditions and uses, and climate hazards, while the DOI funds will focus on increasing the return on investment from Federal land protection and restoration through projects on adjacent non-Federal lands that restore ecosystems and boost resilience in coordination with non-Federal partners. The NOAA Regional Coastal Resilience Grants, funded at \$50 million, will provide competitive grants to state, local, tribal, private, and NGO partners to support resilience activities such as vulnerability assessments, regional ocean partnerships, and development and implementation of adaptation strategies. The new program at DOI, also funded at \$50 million, will be modeled after the agency's Hurricane Sandy Competitive Grant Program and will expand the footprint of healthy ecosystems to deliver valuable ecosystem services, including flood attenuation and storm risk reduction, to nearby communities.
- *Drought Resilience.* The Budget strongly supports USDA in its efforts to integrate climate considerations into existing programs and to use programs to drive resilience in rural communities. For example, through its regional Climate Hubs, the Department will provide information and guidance to farmers, ranchers, and forest landowners on the latest technologies and risk management strategies to help them implement climate-smart tactics. This effort is complemented by \$89 million for the DOI's WaterSMART program, which promotes water conservation initiatives and technological breakthroughs.
- *Wildland Fire Resilience.* The Administration is committed to ensuring that adequate funds are available to fight wildland fires, protect communities and human lives, and implement appropriate land management activities to improve the resiliency of our Nation's forests and rangelands. To accomplish this, the Budget proposes to establish a new budget framework for wildland fire suppression, similar to how we pay for other natural disasters. The Budget proposes a base funding level of 70 percent of the 10-year average for suppression costs within the discretionary budget cap. A cap adjustment would then be used for only the most severe fire activity, which comprises one percent of the fires but 30 percent of the costs. This framework minimizes the adverse impacts from transferring funds from other programs, reduces fire risk, and allows landscapes to be managed more comprehensively.
- *Mitigating the Effects of Future Disasters.* The Budget provides \$200 million for FEMA's Pre-disaster Mitigation Grant Program, an increase of \$175 million over current funding levels. This funding will predominately support mitigation planning, facilities hardening, and nonstructural risk reduction measures, such as buyouts and elevation of structures. Studies on mitigation activities conclude that Americans save \$3-\$4 for every dollar invested in pre-disaster mitigation.
- *Climate Resilience Toolkit.* The President's Budget provides \$20 million to continue expanding and improving the recently-released online Climate Resilience Toolkit, which provides scientific tools and information to help tribes, communities, citizens, businesses, planners, and others understand and manage their climate-related risks and opportunities, and improve their resilience to extreme weather events. Through this website, the public can access a variety of tools and data streams to help them understand how certain changes in environmental

conditions - such as sea level rise and flooding, or droughts and wildfires - may impact their communities.

- *On-the-Ground Partnership with Local Communities.* The Budget provides \$4 million to support a resilience corps pilot program at the Corporation for National and Community Service. This pilot program will support roughly 200 AmeriCorps members to assist communities in planning for and addressing the impacts of climate change. The Budget also includes \$2 million for NOAA to train the corps members. In addition to establishing the community resilience corps, the Budget also scales up on-the-ground programs that are already at work -- like the Army Corps of Engineers Silver Jackets -- by providing \$31 million for the Army Corps of Engineers to provide local communities with technical and planning assistance regarding the development and implementation of nonstructural approaches to manage and reduce flood risk. The Budget also provides a total of \$50 million, a \$40 million increase, for American Indian Tribes and Alaska Native Villages and new funding totaling \$7 million for Insular Areas (including territories and freely associated states) for understanding, planning for, and implementing actions that support community resilience in the face of a changing climate.
- *Research on Managing Natural Resources for Carbon.* The Budget provides \$108 million, an increase of \$24 million, for USDA's Forest Service, EPA, and the Department of the Interior's U.S. Geological Survey (USGS) for research related to the role of lands and associated resources as carbon sinks. This includes: \$83 million, an increase of \$13 million, for the USDA Forest Service's Forest Inventory and Analysis program to deliver landscape scale survey data in all 50 States, including initial surveys and data collection in interior Alaska, to foster terrestrial carbon conservation and retention in land and natural resource management; \$18.5 million for USGS, a \$9.1 million increase over FY 2015, for research and development to advance the science, tools, and application of carbon sequestration, particularly in partnership with the management of public lands and trust resources administered by the Department of the Interior; and \$6 million for EPA, an increase of \$1.3 million, for greenhouse gas accounting.
- *National Weather Service Mid-Range Weather Extreme-Weather Risk Outlooks.* To reduce harm from extreme-weather events occurring throughout the world, last fall the Administration announced its intent to begin a coordinated U.S. effort to develop reliable extreme-weather risk outlooks on time horizons that are currently not available. This effort will aim to develop new extreme-weather outlooks in the 15-30 day range, beyond the 14-day limit of current reliable weather forecasts. The Budget includes a \$9 million increase to NOAA to improve expertise in providing extreme-weather outlooks out to three or four weeks. These extended risk outlooks have the potential to save lives and improve business operations through better planning.

Protecting Resources on Federal and Tribal Lands. In 2016, Federal agencies will continue to fulfill the President's commitment to modernize policies and programs to help State and local governments build resilience to the impacts of climate change. For the Department of the Interior, robust increases are proposed for climate-related work, including for: adaptive management across public lands and resources managed by the Fish and Wildlife Service, the Bureau of Land Management, and the National Park Service; drought mitigation and sustainable water management by the Bureau of Reclamation; climate resilience on tribal lands through the Bureau of Indian Affairs; and the development of science and tools by the United States Geological Survey and other bureaus to support adaptive resource management.

Understanding the Impact of Climate Change on Oceans. The Budget includes \$30 million for an expanded ocean acidification research program at the National Oceanic and Atmospheric Administration. This will allow for better understanding of the impacts of increasing levels of atmospheric carbon dioxide on ocean chemistry and marine resources.

Understanding Global Climate Change and its Impacts. The U.S. Global Change Research Program (USGCRP) coordinates Federal research to improve our ability to understand, assess, predict, and respond to the human-induced and natural processes of global change and their related impacts and effects. USGCRP outcomes support the Administration's Climate Action Plan. The Budget includes approximately \$2.7 billion for USGCRP, advancing scientific knowledge of the integrated natural and human components of the Earth system; providing the scientific basis to inform and enable timely decisions; supporting sustained assessment capacity that improves the ability to document changes on the regional, landscape, and local level to understand, anticipate, and respond to global change impacts and vulnerabilities; and advancing communications and education to broaden public understanding of global change. The Budget also supports an integrated suite of climate change observations, process-based research, modeling and assessment, and adaptation science activities that serve as a foundation for providing timely and responsive information including but not limited to technical reports, impact and vulnerability assessments, and adaptation response strategies to a broad array of stakeholders.

Investing in the Green Climate Fund and Leading Efforts to Cut Carbon Pollution and Enhance Climate Change Resilience. The President's Climate Action Plan also calls for leadership abroad. To support this objective, the Budget provides \$1.29 billion, a significant increase above the 2015 enacted level, to advance the goals of the Global Climate Change Initiative (GCCCI) by supporting important multilateral and bilateral engagement with major and emerging economies. This funding includes \$500 million for U.S. contributions to the new Green Climate Fund (GCF), which will help developing countries leverage public and private finance and invest in reducing carbon pollution and strengthening resilience to climate change. By reducing the most catastrophic risks of climate change, the GCF will help promote smart, sustainable long-term economic growth and preserve stability and security in fragile regions of strategic importance to the United States. These investments will build on the best practices and lessons learned from the Climate Investment Funds (CIFs). More broadly, GCCCI funding enables the U.S. to provide international leadership through the Department of State (State), the U.S. Agency for International Development (USAID), and the Department of the Treasury (UST) to expand clean and efficient energy use; to reduce emissions from deforestation and forest degradation and conserve the world's remaining tropical rainforests; to phase down chemicals with high global warming potential, such as hydrofluorocarbons (HFCs); and to support the poorest and most vulnerable communities in their efforts to cope with the adverse impacts of severe weather events and climate change.